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Trisomics were produced in the pollen mother cells of Pennisetum americanum (L) K. Schum plants resulting from seeds treated with M^{-6} platinum diaminodinitrodichloride On the basis of this preliminary study the relative potency of cis- Platinum diaminodinitrodichloride may be roughly equal to the well known plant clastogen, MH.

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Induction of trisomics by platinum diaminodinitrodichloride

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Summary. Trisomics were produced in the pollen mother cells of *Pennisetum americanum* (L) K. Schum plants resulting from seeds treated with 10^{-6} M platinum diaminodinitrodichloride. On the basis of this preliminary study the relative potency of cis-PDD may be roughly equal to the well known plant clastogen, maleic hydrazide.

An interest in the study of trisomy in higher organisms is based on 2 facts. First, a number of congenital birth defects such as Down's Syndrome, Klinefelter's Syndrome and Turner's Syndrome are associated with the presence of an additional chromosome in the human genome. Second, primary trisomics have been useful in the past for establishing genetic linkage groups[2].

Trisomics occur spontaneously and also have been induced in crop plants through breeding techniques. Reports showing the induction of trisomics in higher plants through chemical treatment are rare.

An evaluation of the biological effects of platinum compounds has become of considerable interest as a result of their use in catalytic converters in the automotive industry. One of the platinum compounds, cis-platinum diaminodichloride (cis-PDD) shows potential in cancer chemotherapy[3]. However, cis-PDD has been reported to induce base-pair mutations in bacteria[4]. It has also been implicated as a mutagen on the basis of results in mammalian cells in culture[3,5-7], and in insects[8]. The results reported here show that another platinum compound, platinum diaminodinitrodichloride $[Pt(NH_3)_2(NO_2)_2Cl_2]$ induced trisomics in pearl millet, *Pennisetum americanum* (L) K. Schum.

The seeds of pearl millet inbred line Tift 23DB ($2n = 14$) were presoaked in distilled water for 24 h. Seeds were treated by soaking for 3 h with the freshly prepared solution of the test compound at the concentrations of

Germination percentage and seedling survival after PDDD and MH treatments

Test compound	Concentration	Germination (% control)	Survival 2 weeks after germination (% control)	Number of trisomic plants obtained
Control		100	100	0
MH	10^{-4} M	98	11	0
	10^{-5} M	105	86	2
PDDD	5×10^{-5} M	109	92	0
	5×10^{-6} M	103	80	0
	10^{-6} M	113	87	4
	10^{-7} M	97	88	0

Figure 1. Normal chromosomal complement (7II).

Figure 2. A trisomic cell (6II + 1III, arrow)

$5 \cdot 10^{-5}$ M, $5 \cdot 10^{-6}$ M, 10^{-6} M and 10^{-7} M. Seeds soaked in distilled water provided a negative control and treatment with maleic hydrazide (MH) at 10^{-4} and 10^{-5} M concentrations provided the positive control. Maleic hydrazide has been established as clastogenic in different plant and animal species[3]. 150 seeds were used in each treatment. Pollen mother cells from test plants were stained with acetocarmine for the chromosomal studies.

Seeds treated with a 10^{-6} M concentration of the platinum compound yielded 4 plants with trisomics and those treated with 10^{-5} M MH yielded 2 trisomic plants (table). The other concentrations and the control plants did not yield any trisomics.

All the trisomic plants had certain common characteristics, i.e. small height, late tillering, large number of tillers, and partial sterility. These plants could not be distinguished from each other as to a particular trisomic on the basis of criteria suggested by Gill et al.[2]. Trisomic cells can be distinguished by the presence of an extra chromosome (fig. 2) from the normal cells (fig. 1).

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